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basic imagery interpretation report

SS-NX-20 Submarine-Launched Ballistic Missile System (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES
BE: Various
USSR

~~Top Secret~~

[redacted]

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RCA-[redacted]21/83
DECEMBER 1983
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INSTALLATION OR ACTIVITY NAME					COUNTRY
SS-NX-20 Submarine-Launched Ballistic Missile System					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
NA	See below	See below	See below	See below	See below

MAP REFERENCE

SAC. USATC; Series 200; Sheets 0092-22, 0161-21, 0164-07, 0250-25; scale 1:200,000

LATEST IMAGERY USED	NEGATION DATE (If required)
[redacted]	NA

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Installation Name	Geographic Coordinates	BE No	Category	COMIREX No	NIETB (MRN) No
Balaklava Missile Test Center	44-30-01N 033-32-23E				
Balaklava Submarine Base and Ship Repair Yard	44-30-10N 033-35-49E				
Biysk Solid Motor Production Plant II	52-28-49N 085-02-30E				
Biysk Solid Motor Test Area I	52-30-51N 085-05-01E				
Biysk Solid Motor Test Area II	52-31-16N 085-02-07E				
Nenoksa Naval Missile Test Center	64-38-35N 039-11-45E				
Severodvinsk Naval Base West	64-34-20N 039-45-50E				
Zlatoust Rocket Engine Test Facility	55-08-38N 059-54-55E				
Zlatoust SLBM Assembly Facility	55-08-33N 059-52-56E				

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ABSTRACT

1. The SS-NX-20 submarine-launched ballistic missile (SLBM) is a three-stage, solid-propellant missile carried on Typhoon-class nuclear-powered ballistic missile submarines. The missile is the first Soviet solid-propellant SLBM intended for series production and the first Soviet SLBM to use encrypted telemetry during flight testing. A concentrated effort has been made to conceal as many details of this strategic missile as possible; the procedures used in handling the missiles have effectively prevented the acquisition of detailed mensuration from satellite imagery. The missile is estimated to be approximately 15 meters long with a constant diameter of [redacted] (TSR) 25X1

2. This report discusses the SS-NX-20 from the development and testing of its rocket motors through its flight test programs toward deployment, probably in 1984. The report contains a location map, an imagery-derived chart of program milestones, four tables, and 22 annotated photographs. The information cutoff date for this report is [redacted] (S/WN) 25X1

INTRODUCTION

3. Activity that appeared to be associated with the SS-NX-20 SLBM program was first observed in January 1969, when construction for production line 2 began at Biysk Solid Motor Production Plant II. It is unclear, even at this time, whether this activity was directly related to the SS-NX-20 or to another system. Construction of line 2 progressed at a very slow rate until late 1974 or early 1975, when construction activity increased. Activity also occurred at other facilities that became involved in the SS-NX-20 program in 1975. A major commitment of resources was also evident in 1975, when the construction of new facilities at Zlatoust, Nenoksa, and Severodvinsk and the conversion of an existing submarine for use as a test platform began. Additionally, the construction of a pop-up test platform, first observed at Nikolayev Shipyard Nesenko 444 [redacted] in February 1976, probably began in late 1975. In late 1976, renovation of a part of Zlatoust Rocket Engine Test Facility (RETF) to assemble test missiles began. During 1978, a second line at Biysk Production Plant II may have been dedicated to this program. Initial flight testing and the first successful flight occurred in 1980, at-sea testing began in 1981, and the entire system (missile and submarine) is estimated to become operational in 1984. The locations of these SS-NX-20 SLBM-related facilities are shown in Figure 1. Chart 1 presents a chronology of SS-NX-20 program milestones. (S/WN) 25X1

BASIC DESCRIPTION

Motor Production

4. The presence of three production lines at Biysk Solid Motor Production Plant II could indicate that all three motors for the SS-NX-20 are being produced at this plant. A direct association of a specific motor with a specific line cannot be determined from imagery; however, some associations can be made. The identification of motors and motor cases at line 2 indicates that it is associated with the second stage. The arrangement of cradles on railcars in line 2 is evidence that it is associated with both first- and second-stage motors. The need for motors for testing before lines 2 and 3 were complete suggests that some motor production (stages undetermined) was underway in line 1. The apparent priority given to the reconstruction of line 3 after an accident in one of the buildings in the line during a critical period of system development is evidence that motors (stages undetermined) were being produced. (S/WN)

5. Motors for at least the first and second stage of the SS-NX-20 are produced at line 2 (Figure 2 and Table 1). Line 2 construction began during 1969, and by early 1978, security fences enclosed several of the buildings assessed to be necessary to cast, cure, and inspect motors. The securing of these buildings and the movement of the bay charger within this line indicated that production of motors for test articles and missiles for flight tests had begun. The bay charger is used to move the motors between various buildings on the production line. The presence of an SS-NX-20 second-stage motor case and a railcar with a cradle arrangement that can be used to transport either a first- or second-stage SS-NX-20 motor are the primary indicators that the motors for the first two stages are being produced at line 2. (S/WN)

6. All buildings in line 2 had been externally completed by late 1979. The continual observations of crates and materials near these buildings during the next few years indicated that work continued inside the buildings and that they were not yet operational. By November 1982, these crates and materials had been removed, indicating that the buildings were internally complete and that the production line was capable of series production of motors. (S/WN)

7. A probable SS-NX-20 second-stage motor case, [redacted] was identified on a railcar at line 2 on [redacted] (Figure 3). Railcars used to transport similar [redacted] motors have been observed with cradles either [redacted] These separations permit the transportation of either a first- or a second-stage motor. No cradle arrangement that could be associated with a third-stage motor has been seen within the production line. (S/WN) 25X1 25X1 25X1 25X1 25X1

8. Although no specific imagery-derived information is available to indicate that line 1 and line 3 have been/are associated with SS-NX-20 motor production, the timing of production line construction and SS-NX-20 test motor production suggest an association. SS-NX-20 testing could have begun as early as late 1977 but probably did not begin until early 1978. The first few motors for this phase of testing may have been produced in line 1. Line 2 had only a limited capability by early 1978. Construction of line 3 (Figure 2 and Table 1) began in early 1976, and the line became operational in late 1978. Other evidence indicating that line 3 was involved in the production of motors for the SS-NX-20 was observed in 1980, when an explosion and/or fire destroyed a possible casting building on line 3. The building was intact on [redacted] but by [redacted] only its foundation and 25X1 225X1

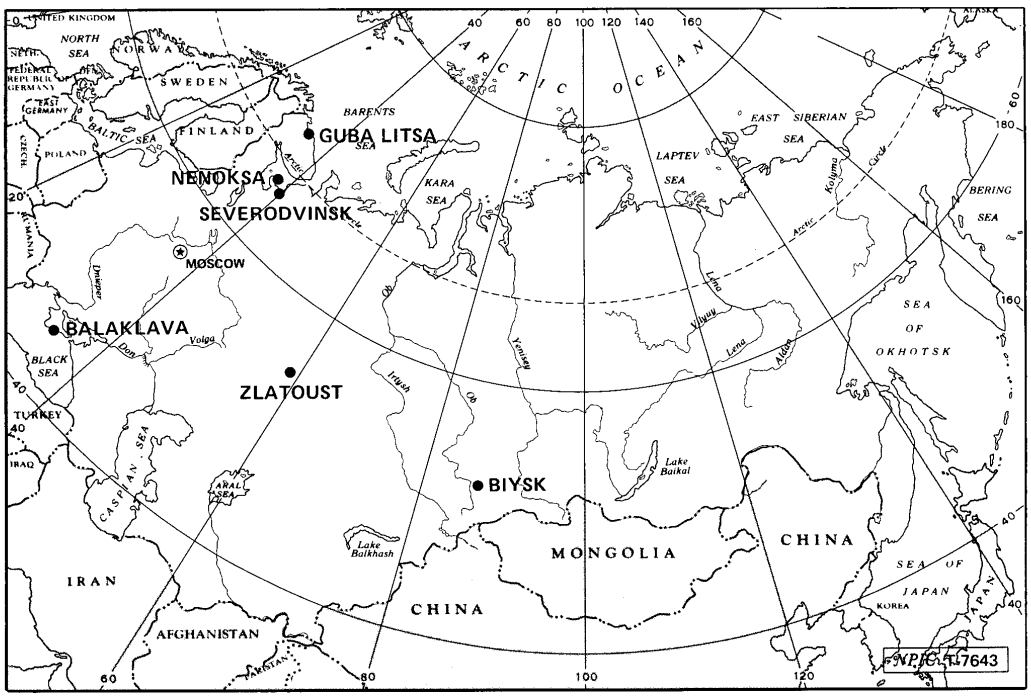

FIGURE 1. LOCATIONS OF SS-NX-20 SLBM-RELATED FACILITIES IN THE USSR

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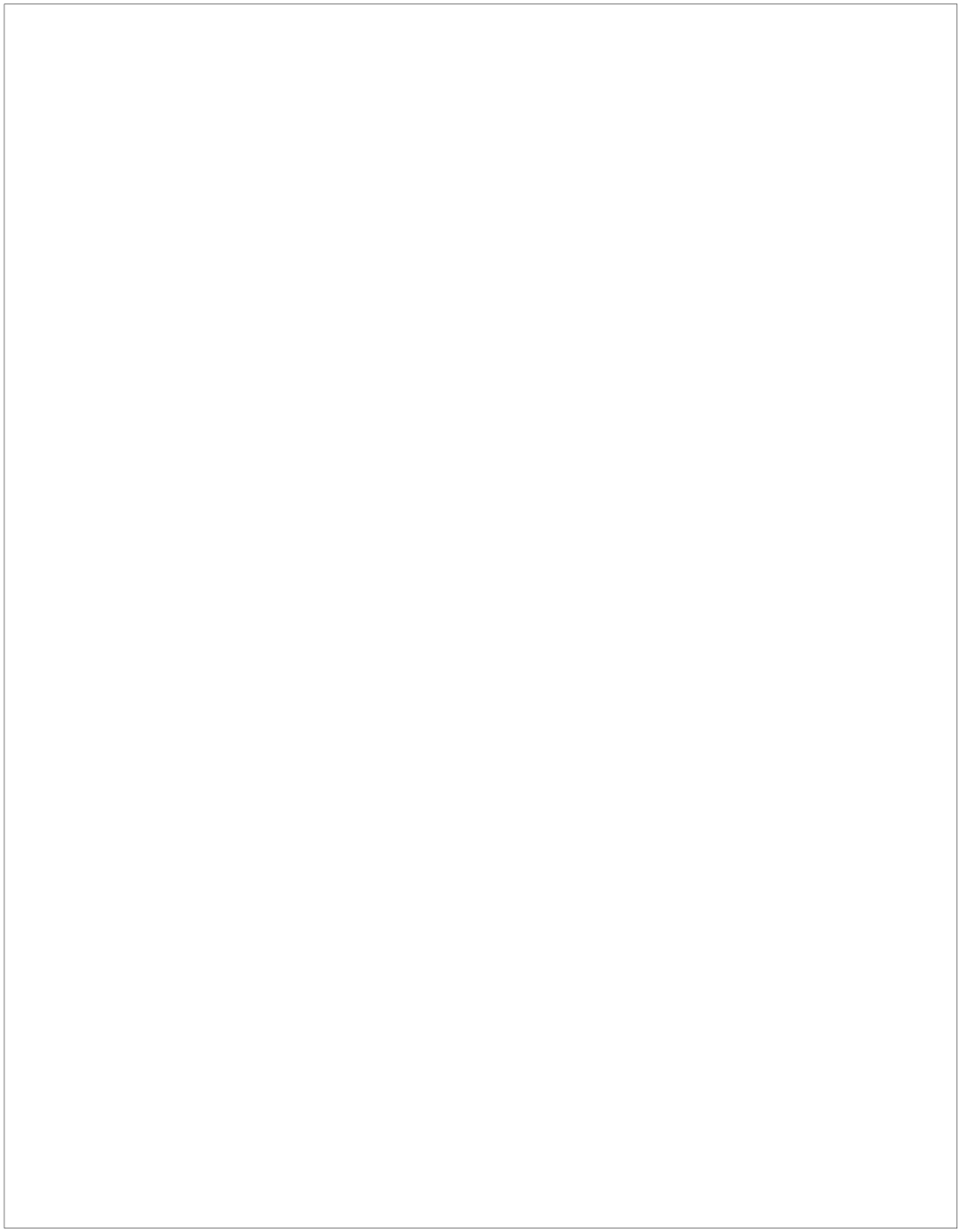

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Table 1.
Production Lines 2 and 3 at Biysk Solid Motor Production Plant II, USSR
(Items keyed to Figure 2)

Item No	Description	Dimensions* (m) L	W	H	First Observed Ucon	Complete
1	Poss casting bldg				Mid-76	Late 78
2	Prob casting bldg				Early 76	Late 77
a						
b						
3	Prob casting bldg				Early 76	Late 77
a						
b						
4	Propellant process bldg				Early 76	Late 77

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Table 1. (Continued)

Item No	Description	Dimensions* (m) L	W	H	First Observed Ucon	Complete
						25X1
5	Ingredients prep bldg				Early 70	Mid-78
6	Ingredients prep bldg				Early 69	Late 72
7	Case prep bldg**				Early 69	Late 79
8	Support bldg				Early 69	Late 71
a						
b						
c						
9	Support bldg				Mid-78	Mid-79
a						
b						
10	Support bldg				Complete when first imaged in 69	
a						
b						
c						
11	Support bldg				Complete when first imaged in 69	
a						
b						
12	Propellant mix bldg				Early 70	Late 76
a						
b						
c						
13	Control bldg				Mid-77	Mid-78
14	6-bay curing bldg				Late 76	Late 78
15	Control bldg				Late 76	Mid-78
16	10-bay curing bldg				Early 69	Late 78
17	Casting pit bldg				Early 70	Mid-76
18	Control bldg				Early 74	Mid 75
19	Control bldg				Mid-75	Late 76
20	10-bay curing bldg				Early 69	Early 76
21	Casting pit bldg				Mid-75	Mid-77
22	Admin/engr bldg				Early 76	Late 78
23	Control bldg				Early 76	Late 76
24	10-bay curing bldg				Early 69	Early 78
25	Finishing bldg				Late 69	Late 73
a						
b						
26	Nondestruct test bldg				Late 69	Late 72
a						
b						
c						
27	X-ray bldg				Late 70	Mid-77
a						
b						
28	Nondestruct suppport/ storage bldg					
a					Mid-77	Mid-78
b					Mid-78	Late 79
c					Early 71	Mid-73
29	Nondestruct test bldg				Early 70	Early 72
a						
b						
30	Transshippment bldg				Early 70	Late 71

[redacted] 25X1

** The western one-third of the overall building was constructed during the same time as the rest of line two, thus associating it with production line two.

This table in its entirety is classified SECRET/WNINTEL

scattered debris remained. Reconstruction progressed rapidly; between [redacted] the new building was externally completed, and construction debris was removed from the site. The building appeared to be operational by late summer 1980. The rapid reconstruction of this possible casting building suggests that a high priority was attached to the missile program associated with line 3. Additionally, the entire line, although small, was constructed during a relatively short period, further suggesting that this was a high priority missile system. The period of construction of line 3 coincides with the estimated time that the SS-NX-20 motor was produced for testing. The size of motors produced on lines 1 and 3 cannot be determined because neither motors nor shipping containers have been observed. (S/WN) 25X1

Motor Testing

9. Improvements to Biysk Solid Motor Test Area II were made between May and November 1977. As a result of these improvements, this test area is the largest horizontal test position for testing solid-propellant motors within the USSR. The

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improvements included upgrading the instrumentation for the test position, installation of additional heat resistant blocks near the thrust block, and enlargement of the thrust block itself. The improvements were probably made to support static testing of SS-NX-20 motors, which had probably begun by early 1978. (S/WN)

10. A crate, was first observed on a transporter in Biysk Solid Motor Test Area I in early 1980. This 10-meter-long crate is used to transport motors between Test Areas I and II. Test Area I is the checkout and support area for articles tested in Test Area II. When not in use, the crate and transporter are usually stored at the H-shaped checkout building in Test Area I (Figure 4). (S/WN)

11. In March 1980, two events occurred that provided evidence of an association between Test Area II and the SS-NX-20 missile system. Between the 10-meter-long crate and the transporter were in Test Area II. On a blast mark, 300 meters long and 71 meters wide, was present. A correlation of 10-meter-long crate and transporter appearances and probable SS-NX-20 motor tests is made in Table 2. (S/WN)

12. A probable SS-NX-20 second-stage motor was mounted in a test fixture against the thrust block at Biysk Test Area II on (Figure 5). The motor was this included a nozzle, and approximately in diameter. The diameter was difficult to determine because the motor was partially canvas covered. The framework in which the motor was mounted was approximately in diameter. This was the first observation of the 10-meter-long crate with the probable SS-NX-20 motor and also the first observation of a motor test after the rapid reconstuction of the possible casting building in line 3. (S/WN)

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13. The August 1980 test, some eight months into the flight test phase of the program, probably reflects concern about the series of setbacks in the SS-NX-20 program during 1980. The five initial test flights, all flown during 1980, resulted in failures. Also, the rapid reconstruction of a possible casting building on line 3, destroyed by an explosion and/or fire between mid-March and April 1980, suggests the necessity of returning line 3 to production during this period of flight test failures. (S/WN)

Pop-Up Testing

14. The SS-NX-20 test program was the first in which both static and underway pop-up tests of an SLBM were performed at the Balaklava Missile Test Center (MTC) on the Black Sea. Previously, static testing had been conducted at Balaklava, and the underway testing had been conducted at the facilities of the Northern Fleet missile complex. Static pop-up testing of the SS-NX-20 at Balaklava began sometime after August 1977 and probably ended in mid-November 1978. No pop-up testing was possible after August 1979, when the launch tubes were removed from the test platform. (S/WN)

15. The initial indications of pop-up testing of a new SLBM were observed in February 1976, when a new pop-up test platform (designated platform 8) was observed under construction at Nikolayev Shipyard Nesenko 444. This shipyard had previously been associated with the construction of other pop-up test platforms. The overall size of platform 8 (29 by 15 meters) was larger than that of platform 5 (24 by 11 meters), which had been used for pop-up tests of the SS-N-17 and possibly the SS-N-18. Since platform 5 was the largest platform then in use, platform 8 was assessed to be for an SLBM that would be larger/heavier than these earlier missile systems. (S/WN)

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16. Indications of pop-up testing of an SLBM were observed at Balaklava in 1977. By March, two new large stabilization bouys (Figure 6) were delivered to Balaklava Submarine Base and Ship Repair Yard, and by July, the bouys were positioned in the offshore pop-up test area. In May, the first of two new SLBM transporters (modified flatbed trailers) arrived in the missile handling area at the MTC (Figure 7). In July, a cylindrical object, meters long and approximately in diameter, was on one of the transporters (Figure 8). Because the object was longer than an SS-NX-20 launch tube, the object was probably a missile canister. (S/WN)

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Static Pop-Up Testing

17. Platform 8 (Figure 9) arrived at Balaklava Submarine Base in August 1977. The platform was at the base on all subsequent imagery; however,

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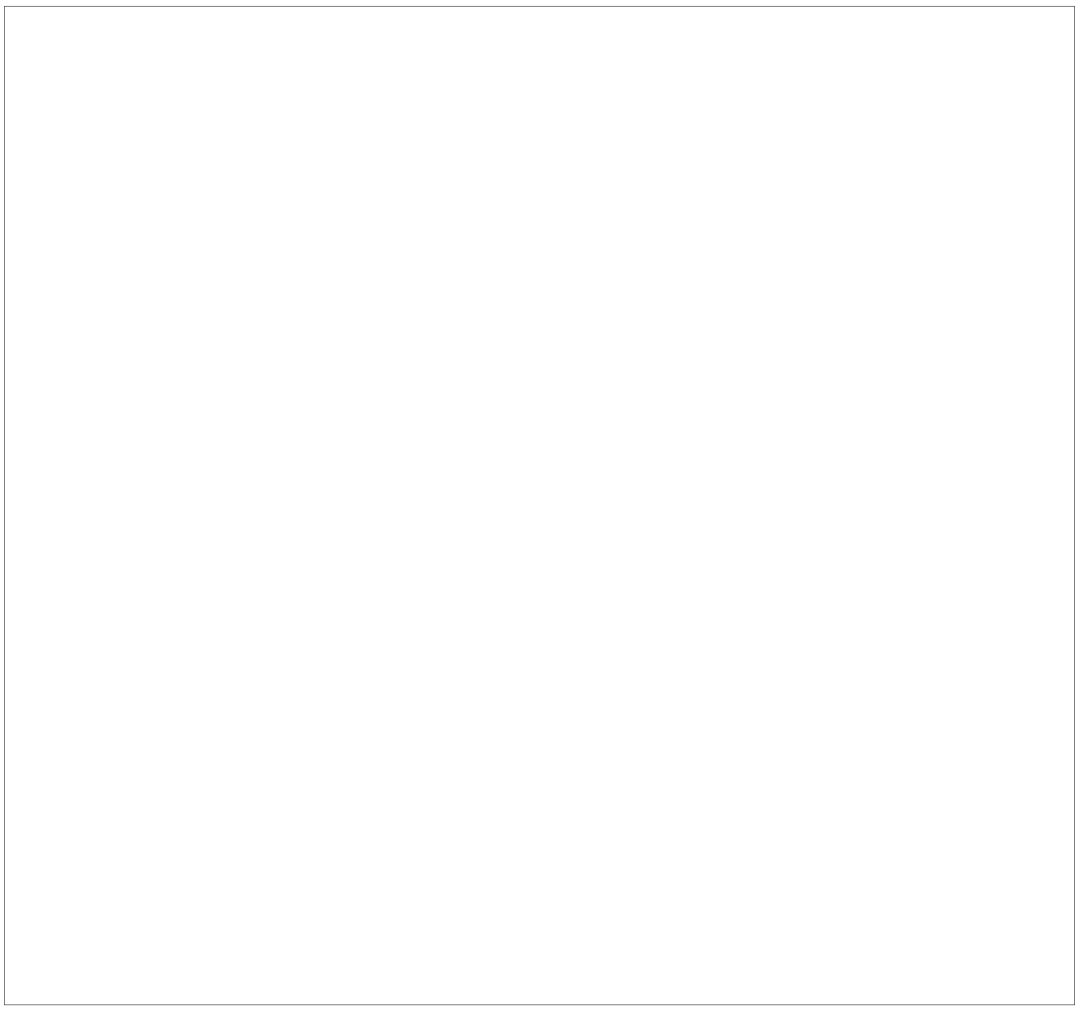

Table 2.
Activity at Biysk Solid Motor Test Area II, USSR

Date	Description	Remarks*
	Test activity	Prob test fixture [redacted] in front of TB
		Blast mark, 300 m by 71 m; transporter w/10-m-long crate on road east of test position
	Prob test activity	ES over TB; transporter w/10-m-long crate on road east of test position
	Test activity	ES over TB
		Poss SS-NX-20 second-stage motor on test fixture in front of TB; transporter w/10-m-long crate inside test position beside motor
		ES over TB; transporter w/10-m-long crate on road east of test position
		ES moved to west side of test position; transporter and 10-m-long crate remained on road east of test position
	Prob test activity	ES over TB; transporter w/10-m-long crate east of test position
		ES over TB; transporter w/10-m-long crate absent

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Table 2. (Continued)

Date	Description	Remarks*
[redacted]	Test activity	ES over TB
		Transporter w/10-m-long crate east of test position; unid object in front of TB
		CR moving poss cylindrical object at TB
		Motor/test fixture in front of TB
		Blast mark, approx 300 m long; ES at side of test position
	Test activity	ES and CR at TB
		10-m-long crate location unknown
		Blast mark, approx 300 m long; ES and CR at TB
		CR at TB; ES at side of test position
	Test activity	ES over TB; 10-m-long crate at entrance of test area
		ES removed from TB; 10-m-long crate at entrance of test area; dark-toned area north of test position
	Test activity	ES over TB; CR beside TB; 10-m-long crate at entrance to test area
		Blast mark, 290 m by 100 m
	Prob test activity	ES over TB; CR outside test position
		10-m-long crate near test area entrance
		10-m-long crate gone
	Poss test activity	ES over TB; CR inside test position
		10-m-long crate on access road
		10-m-long crate gone
	Poss test activity	ES over TB; CR inside test position
		10-m-long crate on access road
	Test activity	ES over TB
		280-m-long blast mark; ES still over TB; CR moved in test position; 10-m-long crate on access road; unid object on dolly west of test position
	Poss test activity	Prob solid motor [redacted] and prob solid motor/test fixture [redacted] outside test cell; size suggests assoc with SS-NX-20; ES removed
	Test activity	ES over TB
		280-m-long blast mark; 10-m-long crate on access road

*KEY: ES environmental shelter
TB thrust block
CR crane

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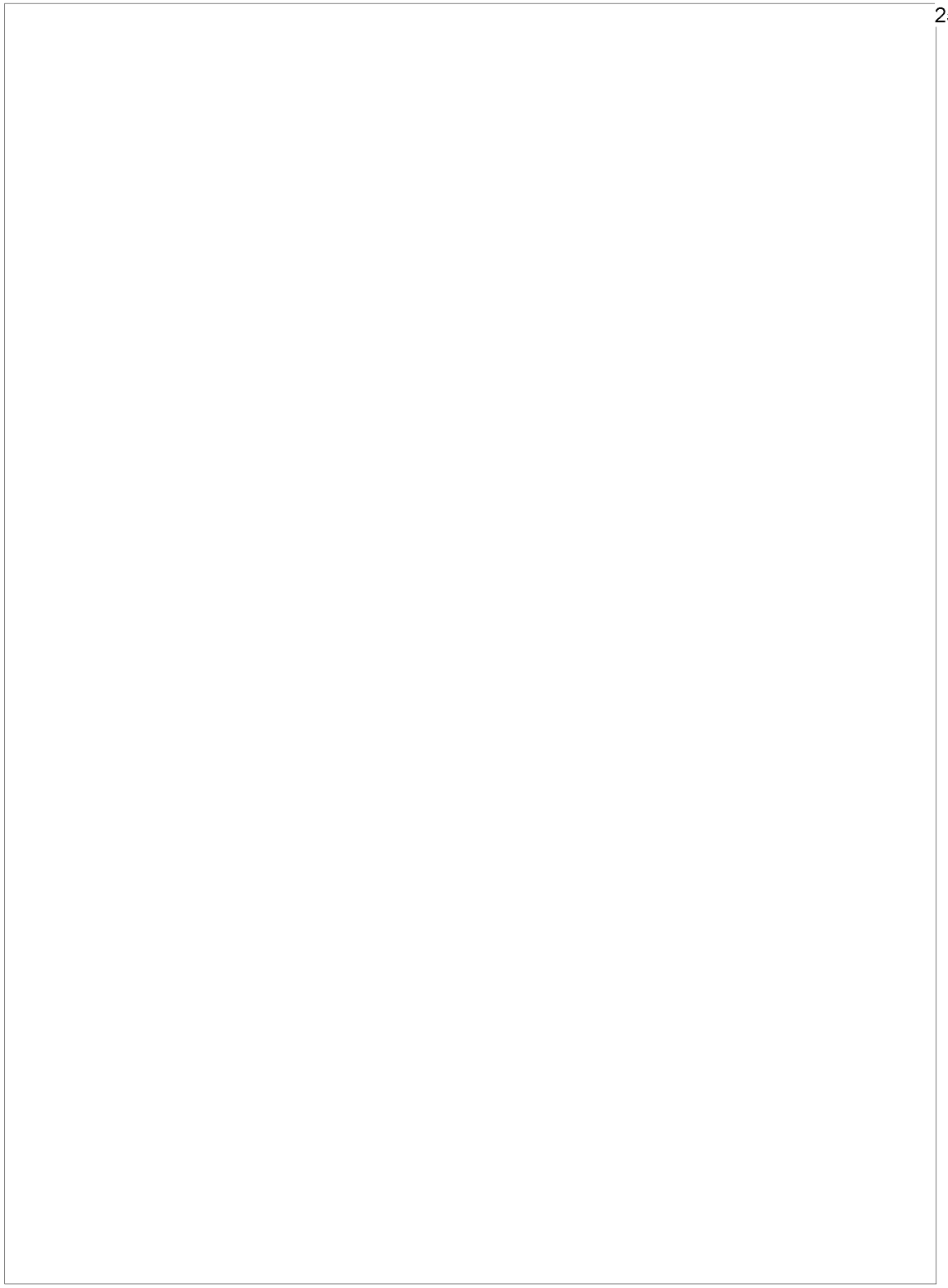

on several occasions, the orientation of the platform with respect to its berthing position had changed. This probably indicates that the platform had been removed from and returned to the base. If this occurred, static pop-up tests may have been conducted between:

[redacted]

Additional evidence that a static pop-up test occurred between [redacted] was the presence of a floating crane at the submarine base on [redacted] Such cranes are necessary for missile loading and are not kept at Balaklava; they must be brought from Sevastopol and are returned there after a test. On [redacted] a floating crane of the type associated with missile-loading operations at deployed facilities was moored next to platform 8. However, the Golf-V ballistic missile

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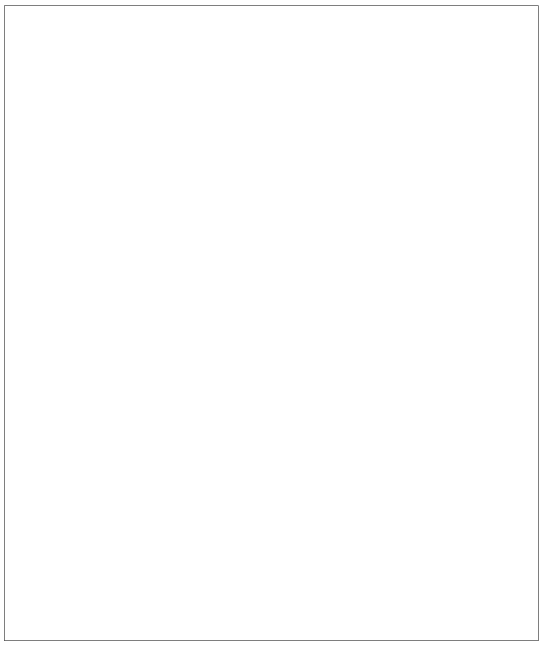

submarine (SSB), used as the underway pop-up test platform, was also alongside. The crane could have been used to load either the platform or the submarine. The change in orientation of platform 8 between and the fact that the submarine had only arrived in October suggest that the activity was related to the platform and a static test. (S/WN)

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18. No further movement in platform 8 was observed until when it had been repositioned in preparation for the removal of its launch tubes. By a floating crane had arrived (Figure 9). Both launch tubes had been removed by (Figure 10). The tubes were 16 meters long and in outer diameter. The length included the door assembly. The tubes were removed intact and have remained in storage at the Balaklava Submarine Base. (S/WN)

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Underway Pop-Up Testing

19. The Golf-V SSB (Figure 11) arrived at Balaklava Submarine Base in October 1978 and was used in the underway pop-up test phase of the SS-NX-20 program. The submarine had been converted from a Golf-I SSB at Severodvinsk Shipyard 402 between May 1975 and August 1978. The SSB was originally assessed to be the at-sea test platform for live firings of the SS-NX-20; however, it was transferred via the inland waterway to the Black Sea and was never returned to Severodvinsk for at-sea testing of the missile. (S/WN)

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20. Underway pop-up testing may have begun as early as November 1978. The Golf-V SSB was alongside a floating crane on The first time the Golf-V was not observed at the submarine base was when it was underway, on the surface, near the base. It was again absent from the base on one of the two missile

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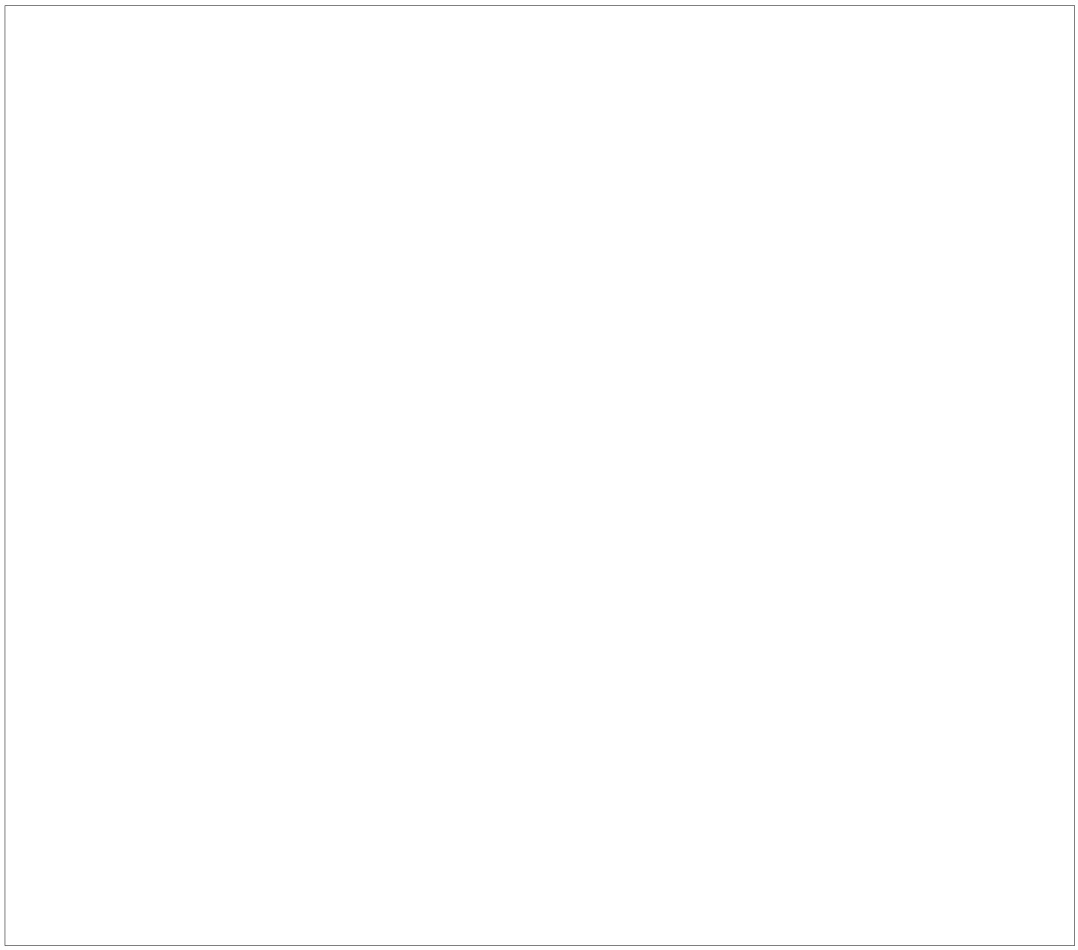

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transporters in the missile-handling area had been moved. The Golf-V was in the roadstead on and had not returned to the base on If this activity was related to a pop-up test, it indicates that the underway pop-up phase and the land-based phase overlapped because, by that time, several launches from Nenoksa had already occurred. The underway pop-up test phase had probably been concluded by when the two missile transporters were covered with camouflage canvas. The subsequent movement of the Golf-V was probably not test related. (S/WN)

21. A unique feature of the pop-up test phase of the SS-NX-20 program was the lack of rail service. All other phases of testing and production had required rail service. Since pop-up test missiles may be inert, road transportation may have been acceptable. Another unique feature of this phase was the use of standard floating cranes for missile loading at Balaklava. At Nenoksa, an erector-loader was specially constructed for missile loading, and at Severodvinsk, a special transporter crane was built for this purpose. Although the standard crane may have been used because of the inert state of the test missiles, it also demonstrates that the Soviets are capable of loading an SS-NX-20-sized missile without using specially configured equipment. (S/WN)

Flight Test Missile Assembly

22. All SS-NX-20 flight test missiles have probably been assembled in two specially modified buildings at Zlatoust RETF. An assembly/checkout building (inset a, Figure 12) was modified and expanded between late 1977 and January 1979, and a receiving and inspection building (inset b) was expanded and equipped with new production equipment between 1976 and 1978. The association of the RETF with the SS-NX-20 was confirmed in January 1979, when a 19-meter missile railcar was first observed within the facility. The 19-meter missile railcar is used to transport the SS-NX-20; this railcar has been identified only at facilities associated with the SS-NX-20. This observation further indicates that the facility was producing flight test missiles at this time and would be consistent with the start of the land-based testing, which began on with the launch of the first test missile from Nenoksa. (S/WN)

Land-Based Testing

23. Land-based testing of the SS-NX-20 began at the Nenoksa Naval Missile Test Center (NMTC) in January 1980 (Table 3). Indications that a new system would be tested were first observed in July 1975, when ground clearing for a new launch facility (designated launch facility D) began. The facility had probably been completed by July 1979, when tests of the erector-loader mechanism were conducted. A 19-meter missile railcar was observed in this facility in November 1979, two months before the first launch. (S/WN)

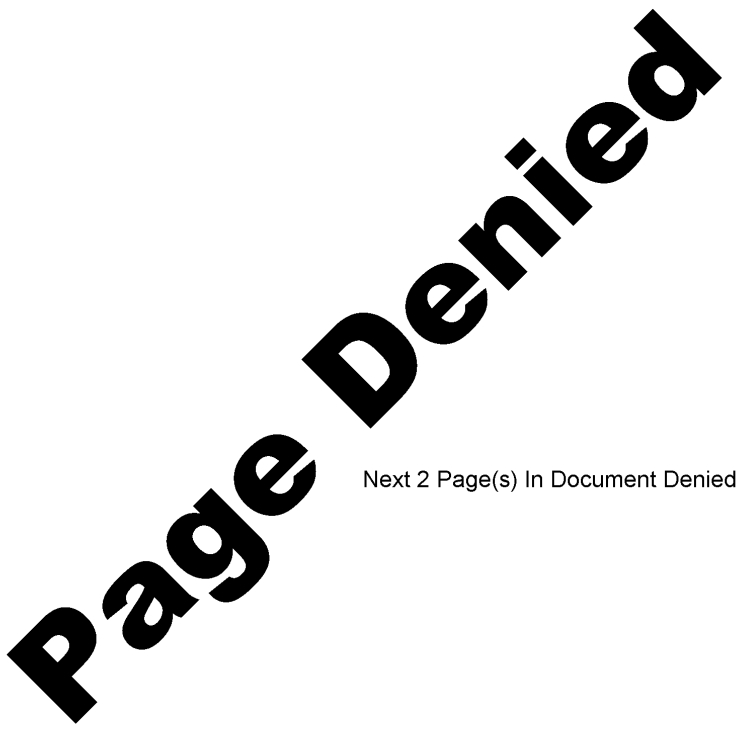
24. Launch facility D (Figure 13) is approximately 1 nautical mile (nm) south of the main support area. The main structures in the facility are an earth-covered subsurface launch building and an earth-covered launch control building. A meter-long missile erector-loader is on top the launch building. The erector-loader is frequently covered with a meter-long cover. The cover separates into three sections, each approximately 8 meters long. The launch building houses a single SS-NX-20 launch tube. The facility is served by a single rail line that divides into two spurs just before entering the north end of the facility. The terminus of one of the rail spurs is at the north end of the erector-loader and is surrounded by lightning arresters. The other rail spur parallels the east side of the launch building and is used to move support equipment to and from the site. A concrete pad, where the erector-loader cover is stored during tests, is just south of the facility. The key recognition feature of facilities involved in the testing or storage of live SS-NX-20 missiles has been rail service. (S/WN)

25. The SLBM assembly/checkout building (Figure 14), constructed in the main support area originally for the SS-N-18 program, was renovated for the SS-NX-20 program. As part of this renovation, two new TT-EL-01 telemetry antennas were installed in early January 1980, several weeks before the first launch. The installation of these antennas indicated that a new type of telemetry, not previously associated with naval missile systems, would be used in the SS-NX-20 program. Analysis of telemetry data collected from the launch indicated that about 70 percent of the data was encrypted. This was the first use of encrypted telemetry on a Soviet SLBM system.[1] (S/WN)

SS-NX-20 Launch Cycle

26. Because of the extensive imagery collection of Nenoksa NMTC throughout the land-based testing phase, the activity involved in the launch of an SS-NX-20 is well documented. Not all of these events have been observed in conjunction with each launch. However, the events have been observed frequently enough to indicate that they always occur. (S/WN)

27. The launch scenario has been consistent. First, the test missile is delivered to the SLBM checkout area from Zlatoust RETF in a uniquely configured 19-meter missile railcar (Figure 15). The missile is moved inside the checkout building several days before the launch. After checkout, the missile is transported to launch facility D in the 19-meter missile railcar. The missile is pulled from the railcar onto the erector-loader, and the erector-loader (with two sections of its cover still in place) is elevated over the launch tube (Figure 16A). During loading, the two TT-EL-01 antennas on the checkout building are rotated (Figure 16B) toward the launch facility to monitor the telemetry package. Since these antennas do not usually face the launch facility, rotation to that direction is an indication that a missile is in the launch tube and that checkout of the telemetry package is underway. After the missile has been loaded into the launch tube, the three sections of the erector-loader cover are removed and placed on a concrete pad south of the facility (Figure 17) to prevent damage during launch. Blast marks are sometimes observed on postlaunch imagery (Figure 18), particularly in the winter. After a launch, the erector-



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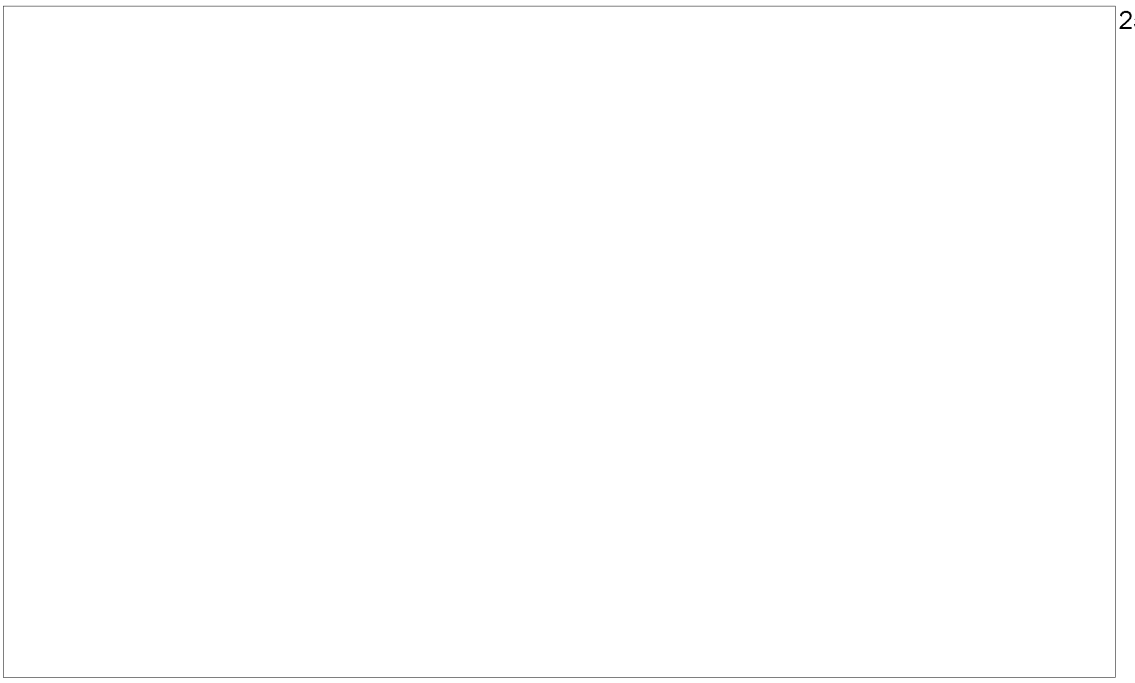

loader cover sections are returned to the launch area (Figure 19). Two sections are usually placed back on the erector-loader, and one section is placed over the launch tube. The section over the launch tube allows enough clearance so that refurbishment of the tube can take place. Although the erector-loader cover is [redacted] only two sections are required on the erector-loader during loading. This indicates that [redacted] is enough to conceal the SS-NX-20 during loading operations. (S/WN)

At-Sea Testing

28. The at-sea test phase of the SS-NX-20 SLBM program began in December 1981 (Table 3). Typhoon nuclear-powered ballistic missile submarine (SSBN) unit 1 has served as the at-sea test platform. The test missiles are brought to the SS-NX-20 checkout building at Nenoksa NMTC from Zlatoust RETF. After preparation, they are transferred to the SS-NX-20 loading facility at Severodvinsk Naval Base West (Figure 20) by rail. Construction of this loading facility began in early 1975. The large transporter crane was constructed specifically for the Typhoon/SS-NX-20 system. Two large lightning arresters have been installed to protect the missile during the loading operations. At-sea testing has included four multilaunches. (S/WN)

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Table 3.
Chronology of SS-NX-20 SLBM Launches

SLBM Launch(s)*	Date*	Launch Point*	Remarks*
1		Nenoksa	Single launch; failure
2		Nenoksa	Single launch; failure
3		Nenoksa	Single launch; failure
4		Nenoksa	Single launch; failure
5		Nenoksa	Single launch; failure
6		Nenoksa	Single launch; successful
7		Nenoksa	Single launch; successful
8		Nenoksa	Single launch; failure
9		Nenoksa	Single launch; failure
10		Nenoksa	Single launch; successful
11		Nenoksa	Single launch; successful **
12		Typhoon unit 1	Single launch; successful
13		Nenoksa	Single launch; successful
14		Nenoksa	Single launch; successful
15		Nenoksa	Single launch; failure
16		Nenoksa	Single launch; successful**
17		Nenoksa	Single launch; successful
18		Nenoksa	Single launch; successful
19		Typhoon unit 1	Single launch; successful
20		Typhoon unit 1	Single launch; successful
21		Typhoon unit 1	Single launch; successful**
22 & 23		Typhoon unit 1	Dual launch; successful
24 & 25		Typhoon unit 1	Dual launch; successful
26		Typhoon unit 1	Single launch; successful
27–29		Typhoon unit 1	Triple launch; successful
30–33		Typhoon unit 1	Quadruple launch; successful
34		Nenoksa	Single launch; successful

[redacted] 25X1

**Reduced-range test

This table in its entirety is classified [redacted] 25X1

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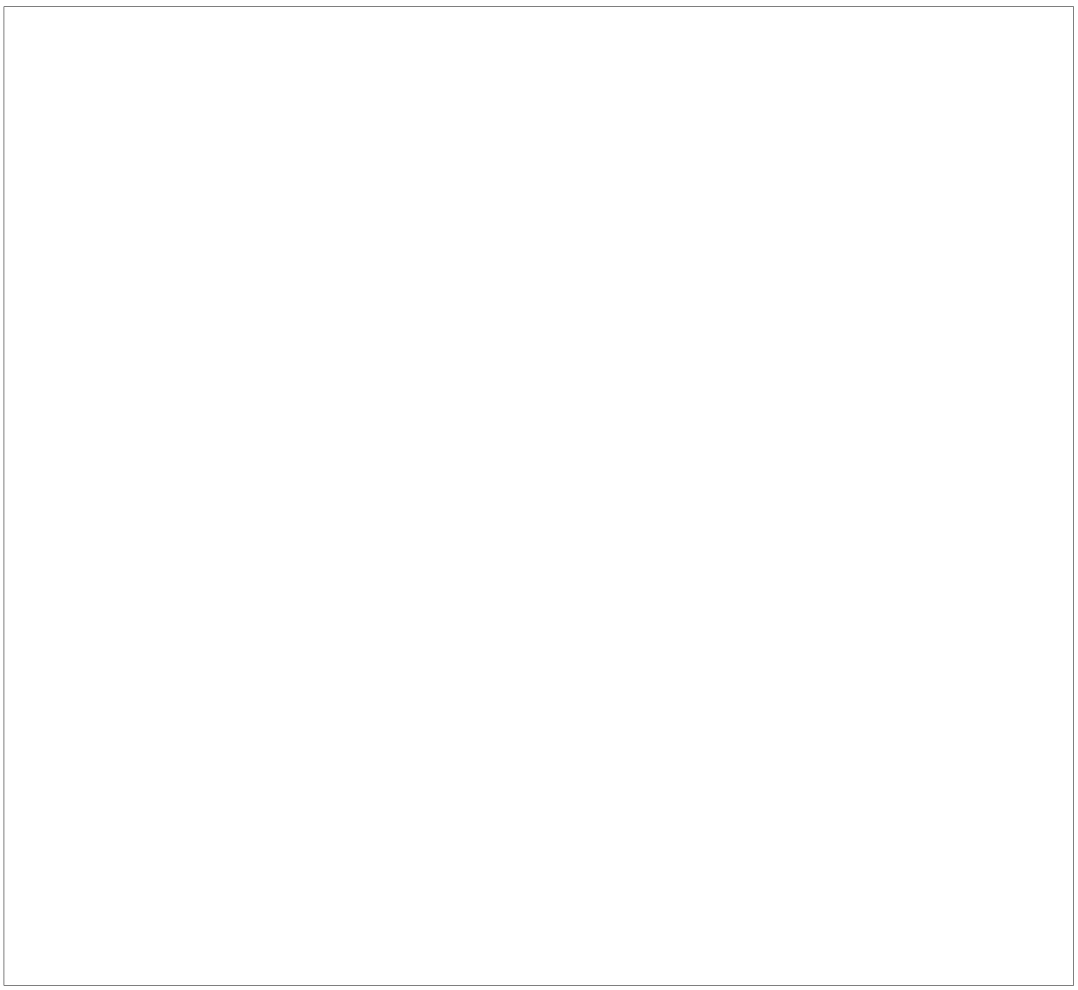

Table 4.
Zlatoust SLBM Assembly Facility, USSR (Items keyed to Figure 22)

Item No	Description	Dimensions* (m) L	W	H	Date Observed Complete
1	Support bldg	62	13	7	Nov 79
2	Firehouse				Mar 80
a		25	19	5	
b		7	5	20	
3	Support bldg				Nov 79
a		36	13	11	
b		19	13	6	
4	A-D underground storage	30	25	—	Nov 79
5	Motor storage/stage prep bldg				Nov 79
a		43	40	8	
b		55	32	24	
c		38	12	13	
6	Final assembly and checkout bldg				Jan 80
a		33	13	7	
b		67	32	24	
c		37	19	13	
7	Support bldg	55	19	13	Oct 80
8	Support bldg	31	25	7	Apr 80
9	Support bldg	57	16	7	Jan 82
10	Inspection bldg				Feb 80
a		72	16	14	
b		72	13	10	
11	Support bldg	25	10	6	Apr 80
12	Support bldg	49	8	—	Ucon
13	Assembly/fab bldg				Ucon
a		37	9	—	
b		43	37	19	
c		31	25	15	
14	Service bay	670	30	12	Nov 82
15	Storage bldg	19	12	—	Apr 82
16	Spill pond				Oct 80
a	Inside	40	36	—	
b	Outside	59	57	—	

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Renewed Land-Based Testing

29. On [redacted] an SS-NX-20 SLBM was launched from Nenoksa launch facility D after a hiatus of just over one year. The facility had been in caretaker status during most of that time. Activity at the launch building in April and June was thought to be periodic maintenance because the land-based phase of the program had ended. Imagery of the facility acquired on [redacted] (Figure 21) showed the same type of posttest activity as that previously observed after other launches. Sections of the erector-loader cover were being returned to the launch area. All subsequent imagery showed work being performed on the launch tube that may be indicative of additional launches from Nenoksa. Since the at-sea test program has apparently been successful, the return to the land-based test facility is probably related to the testing of a modification to the SS-NX-20 missile. (S/WN)

Series Production

30. In mid-1975, ground clearing for Zlatoust SLBM Assembly Facility, a new final assembly facility (Figure 22) for series production of the SS-NX-20, began next to the Zlatoust RETF. Table 4 is a listing of all buildings, their dimensions, and the dates that construction was observed complete. The appearance of the final assembly facility is similar to the assembly area at Perm Solid Motor Production Plant [redacted] and indicates that even though Zlatoust has traditionally been associated with liquid-propellant SLBMs, it is being expanded, and solid-propellant systems are being produced. (S/WN) 25X1 25X1 25X1

Deployment Platform

33. The SS-NX-20 SLBM will be operationally deployed on Typhoon SSBNs, probably in 1984. Unit 1 was launched in September 1980 and began sea trials in June 1981. This SSBN operated from the Litsa area of the Kola Peninsula during the winter of 1982–1983 and the spring of 1983 for crew training and final acceptance testing. Unit 1 returned to Severodvinsk in June 1983 for hull inspection/minor maintenance. Unit 1 departed between [redacted] Unit 2 was launched in September 1982 and began sea trials in July 1983. Submarine components observed at Severodvinsk indicate that four additional units will be produced. Each unit will carry 20 missiles. The six units will provide 120 launch tubes for the SS-NX-20. (S/WN) 25X1 25X1

Operational Support Base

34. Activity at the Kola Peninsula facilities, subordinate to the Northern Fleet, suggests that they will be the operational support facilities for the Typhoon/SS-NX-20. These facilities will include an operational base, support areas, and probably missile storage facilities. (S/WN)

35. Construction activity in the Litsa Bay area and the wintering-over of Typhoon unit 1 (Figure 23) at Guba Litsa Submarine Base Southwest (BE [redacted] suggest that Litsa Bay will eventually support the Typhoon/SS-NX-20.[2] Although expansion of the missile storage area has not begun, a 23-nm-long rail spur is under construction from the Murmansk-Pechanga railroad toward Litsa Bay. Expansion of the facilities at Guba Litsa Submarine Base Southwest and in the Guba Litsa housing area are also underway. (S/WN) 25X1

36. The only facility capable of storing SS-NX-20 missiles is the new, partially operational missile storage facility at Nenoksa. Unlike other Soviet missile storage facilities, each bunker is directly rail served. The new missile storage facility at Nenoksa is connected by rail to the loading facility at Severodvinsk. However, the number of missile storage bunkers at Nenoksa—three large and one small—limits the storage capacity to 20 to 30 missiles, slightly more than the number needed for one Typhoon SSBN. (S/WN)

37. Fifteen missile dollies of the type used at both Nenoksa and Severodvinsk are stored at Olenegorsk Naval Missile Storage Facility (BE [redacted] the regional missile support facility for the Northern Fleet. These dollies may be kept there until a Kola Peninsula site is prepared for the SS-NX-20. (S/WN) 25X1

31. A 19-meter missile railcar was observed at the new final assembly facility for the first time in June 1982. A motor storage/stage preparation building, a final assembly and checkout building, and an inspection building had been built and separately secured by August. These three buildings are each connected to a 670-meter-long service bay. When all the buildings in this line are complete, they will probably be connected to this bay. (S/WN)

32. Although these three buildings are complete and secured, the production process does not yet appear to be operational. This assessment is based on the lack of a complete outer perimeter fence and the low rate of rail traffic. Even though security has been improved since mid-1982, imagery does not indicate that production equipment has been installed in the final assembly buildings. (S/WN)

REFERENCES

IMAGERY

All relevant satellite imagery acquired from January 1969 through [redacted] was used in the preparation of this report. (S/WN) 25X1

MAPS OR CHARTS

SAC. USATC; Series 200; Sheets 0092-22, 0161-21, 0164-07, and 0250-25; scale 1:200,000 (SECRET)

DOCUMENTS

1. DIA. [redacted] DST-1070S-198-80-SAO, *Naval Guided Missile Test Ranges—U.S.S.R. (U)*, 15 Aug 80 (TOP SECRET CODEWORDS/NOFORN*) 25X1
2. NPIC. Z-12060/83, IAR-0025/83, *Submarine-Related Construction at Litsa Bay, USSR (S)*, Jun 83 [redacted] 25X1
[redacted] 25X1

*Extracted information is classified SECRET.

REQUIREMENT

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Comments and queries regarding this report may be directed to the Soviet Strategic Forces Division, Imagery Exploitation Group, NPIC. Those regarding the naval portions may be directed to [redacted] or green extension [redacted] Those regarding the production portions may be directed to [redacted] 25X1 25X1 25X1

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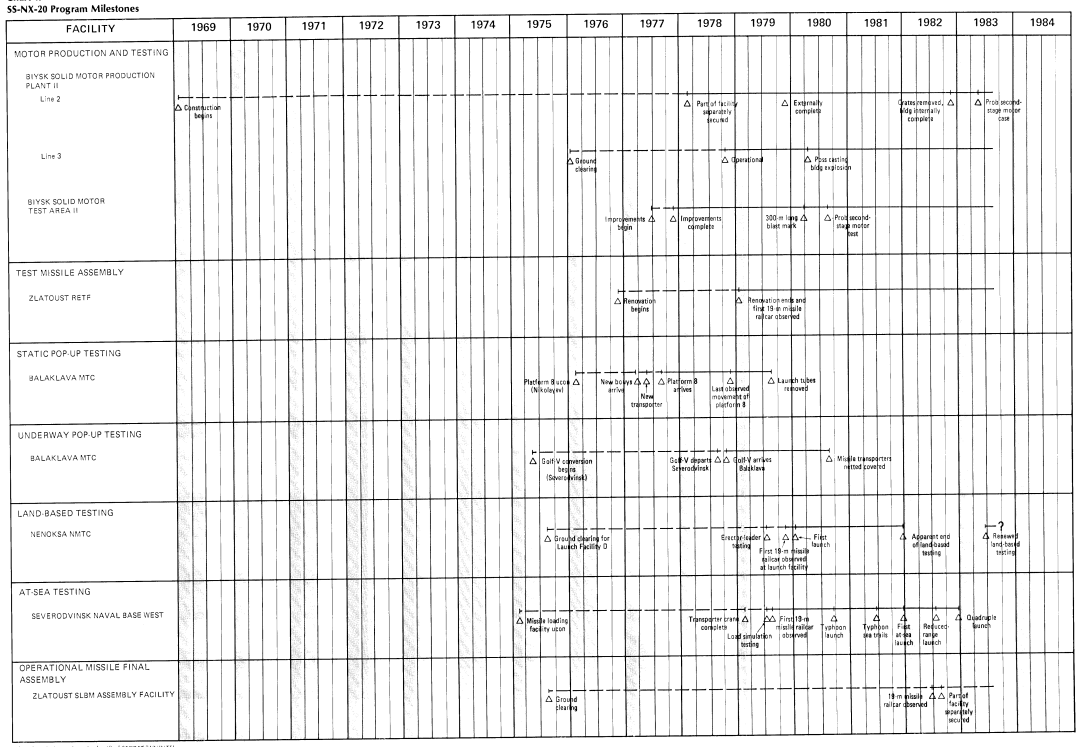
Chart 1.
SS-NX-20 Program Milestones



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